Lexington Conservation

Stewardship Handbook

A Volunteer Project of the
Conservation Commission and Conservation Stewards
Lexington, Massachusetts

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Supersedes all previous versions

Contents

I. About This Document

A. Purpose

The purpose of this document, hereinafter referred to as “Handbook”, is to:

1. Define the Lexington Conservation Stewards organization.
2. Describe the roles within that organization.
3. Teach volunteers filling those roles how to function as effective stewards.

This Handbook is a set of guidelines, not a definitive doctrine. It is an evolving set of lessons learned collectively by the conservation stewardship community in Lexington.

B. Scope/Included Documents

This Handbook primarily describes the organization and management of volunteer stewards. The standards and methods to be used in managing natural open space in Lexington are in the other document(s) implicitly included in this Handbook listed in VII.A, Included Documents. To fully benefit from this Handbook, the reader must become familiar with those other documents.

C. Terminology

Terms and abbreviations used in this Handbook about land management and conservation are defined in V, Glossary of Terms and Abbreviations.

D. Intended Audience

1. The Stewards.
2. Members of CLC.

E. Where to Get Copies of This Handbook

Copies of this Handbook are available on the CLC web site (http://www.lexingtonma.org/clc/pdfFiles.htm), or from the Directors or Conservation Office.

F. Authors

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G. Feedback

Comments and suggestions for improving this Handbook can be sent to Mike Tabaczynski (mjt1@rcn.com) or the Conservation Office.

H. Version

This Handbook supersedes all previous versions.

II. Introduction

Lexington area citizens benefit from more than 1,000 acres of Town-owned natural open space. This land enhances the quality of life in a variety of ways. It protects the flood control values of wetlands, preserves water quality in streams and ponds, protects wildlife and forests, forestalls problems of overly dense land development, and helps preserve the historic character of the Town. Natural open space also provides opportunities for recreational and educational experiences that are rapidly disappearing from the suburban communities of eastern Massachusetts.

Protection of natural open space does not end when land is designated "conservation" or placed under a conservation restriction. Protection is a continuing duty to which very limited Town resources are available. The Lexington Conservation Stewards program was founded in the early 1980s to complement the Town's stewardship of its natural open space by organizing volunteers into an effective force that monitors the condition of, remedies problems in, and promotes public responsibility toward natural open space.

III. The Lexington Conservation Stewards

A. Mission

The mission of the Lexington Conservation Stewards is to care for the open natural space of Lexington as volunteers under the administration of the Lexington Conservation Commission.

B. Authority

The Commission is the final decision making authority for all questions and issues relative to the operation of the Stewards and the actions of its members.

C. Permission to Work

No Steward can assume implied permission to do work at any site. All work must be approved by the Commission or Conservation Office before it is started.

D. Site Primary Contacts

Many natural open space sites have stewards who have volunteered to serve as the primary contact for questions and concerns regarding a site. To contact a site's primary contact, see VI.A Contact Information. To become a primary contact for a site that is not listed, contact the Conservation Office.

E. Handbook Revision, Review, and Approval

1. This Handbook was approved by the Commission if there is a line reading "Approved *<date> <time>*" on every page.
2. The Directors may approve and circulate at any time minor changes to this Handbook to clarify information and correct errors.

3. This Handbook should be reviewed annually and revised if necessary by the Stewards as near to its publishing anniversary as practical, with final drafts approved by the Directors and the Conservation Office.
4. Before going into effect, the final draft agreed upon by the Directors and the Conservation Office must be approved by the Commission after the public has had adequate opportunity to comment on the revised Handbook.

IV. Steward Responsibilities

A. Basic Do's and Don'ts

1. Do

1. Get permission from the Conservation Office before making any permanent or semi-permanent modifications to any site.
2. Visit natural open space as often as possible.
3. Pick up trash and litter. No permission is needed.
4. Communicate with people, including site visitors, neighbors, other Stewards, and the Conservation Office.
5. Express your ideas and ask questions.

2. Don't

1. Don't start any work without getting the proper permission.
2. Don't rake trails. Leaves, pine needles, and other organic matter build forest soil, absorb water, and prevent erosion.
3. Don't trim or open up an overgrown or blocked trail until you have confirmed with the Stewards or Conservation Office that the trail is not closed or slated for closure.
4. Don't build new trails, however "small". If you have a new trail idea, contact a Lead Steward, Director, or the Conservation Office. The creation cycle of a new trail is typically about one year.
5. Don't mark or blaze trails. There are standards for doing this, and all trail marking must be approved by the Conservation Office before any work is started.
6. Don't dump fill or wood chips on trails without the permission of the Conservation Office.
7. Don't apply herbicides or pesticides anywhere on Town property. These chemicals must be applied by a certified Town applicator after the appropriate permits have been obtained.

B. Working with Volunteers

1. Scouts

a) Eagle projects

The highest level of achievement for Boy Scouts is the successful completion of their eagle project. This must be done by their 18th birthday. An eagle project

requires planning and leadership from the scout and typically involves more than 100 hours of total volunteer time, including volunteer help recruited by the scout.

Historically, there has been a wide gap between scout knowledge and the knowledge required to lead projects complex enough to meet the eagle requirements. Good results are achieved only with a high level of intervention from the Stewards or Conservation Office, or knowledgeable family support, or both. Classic examples are new trail and bridge installation, both regularly proposed by eagle scouts. When executed entirely by adults, these types of projects involve a year or more of iterative planning, in conjunction with a land manager, by one or more people who have done extensive reading on the subject, attended formal learning events such as trail school, and helped more experienced volunteers at 10 or more design and construction workdays. No scouts have the equivalent of this level of skill and experience, but it is in everyone's best interests to find alternatives to just saying no or accepting substandard results.

- Communicate with scout leaders regularly.
- Recommend realistic schedules.
- Recommend that scouts have a rough idea of what their project is going to be 2 to 3 years in advance so they have time to acquire training and experience specifically related to that project.
- See the "Land Management Plan" for suggested classes of eagle projects.
- Maintain a list of suggested specific projects, or categorize projects in the geodatabase by eagle suitability, so the scout can choose the best fit from a variety and start work with minimal delay.
- Set standards of performance at the outset and teach that accurately meeting the "customer's" project requirements is an important part of mature project leadership.
- Don't categorically accept proposals that a scout cannot realistically accomplish with acceptable quality and timeliness. Provide honest feedback to help the scout refine his proposal.
- Build the scout's learning curve into the project schedule. Reading, research, mentoring by Lead Stewards, and trail school if relevant and practical, should all be considered an integral part of the project and not just add-ons that don't count.
- Make resources such as books and documents readily available to scouts. Loan them personal copies if necessary.
- Budget time to provide whatever mentoring the scout needs.
- Before, during, and after project execution, compliment and give credit to the scout as much as possible.
- Encourage the scout to place an article about his accomplishment in the local newspaper, written by him, a parent, or a scout leader. This is commonly done, and since the article mentions natural open space, the Commission, and the Stewards, everybody wins.

Properly managing eagle scout projects demands much greater involvement from the Stewards, but experience has shown that the quantity and quality of work done is proportionately greater.

b) General Community Service

The routine community service normally done by scouts is not as complex as eagle projects and probably doesn't require much intervention from the Stewards so long as adequate supervision is provided by scout leaders or family members, which is usually the case.

c) Girl Scouts

Girl Scouts appear to be under-represented in conservation service. The Stewards should devise some ways to remedy that and increase their involvement, or at least determine whether the apparent under-representation is real or perceived.

2. Student Community Service

There are 3 flavors of required community service for minors:

- Correctional
- LSH General
- LHS first year earth science

Correctional community service assigned as punishment by a court is uncommon in Lexington, but not impossible. The vast majority of conservation community service is ninth grade earth science.

a) LSH General

40 hours of any type of community service must be performed to graduate. 20 of those required hours must be performed outside of LHS. The due date is the last day of senior class.

b) LHS First Year Earth Science

For their mandatory earth science class, ninth graders are given a choice between doing a project or performing 16 hours of environmental community service during the academic year. Most students choose community service over the project option, resulting in a new crop of around 340 fourteen year old conservation volunteers every year asking the Conservation Office for work shortly before deadlines set by the school. Below are the contents of the guide sheet given to students to assist them in keeping their journals.

Students choosing the service option in 2004-2005 are expected to have 8 hours of volunteer work completed in the fall by November 15, 2004 and 8 hours in the spring: 4 hours completed by May 5, 2005 and all 8 completed by mid June, 2005. The dates can be expected to be similar in future school years. Because outdoor conservation work shuts down completely between mid-November and mid-April and starts up slowly in spring, the deadlines do not always fit well, so the school teachers administering the program should be encouraged to flexible about setting deadlines as late as practical during the school year.

Earth Science Level 1
Environmental Stewardship

You are required to write a reflection/journal entry each time you complete a volunteer activity. The following is a list of guiding questions to help you along. Keep in mind that these are not the only things you should include, but just the basics. Also, make sure that you ask a person from the sponsoring organization to complete your documentation (Certificate of Completion) form

1) For which organization did you work?
2) How many hours did you work? (Include dates and times)
3) What was the weather like that day?
4) What, exactly did you do during your time on the job?
5) What was the purpose/goal of your activity?
6) How did each task benefit the local environment, community or ecosystem?
7) "Act locally; think globally." How can your personal involvement in this type of activity make a difference to this planet?
8) Did you enjoy your work time? Why or why not?

c) Proposing Projects

Stewards are encouraged to develop projects at the site that 3-5 Lexington high school students can help with. Typical projects are invasive plant removal, basic trail maintenance, and trash removal. Proposed projects, maximum students allowed, and possible work dates can be sent to the Conservation Office. The project information will be passed along to the high school where students can sign up.

d) Recruiting Students

The demand for Stewards who desire assistance in completing simple projects and are willing to supervise small groups of students is unlimited. Give to the Conservation Office your name and contact information (restrict to email if possible), where the work will be, the nature of the work, how many volunteers you need, and when. An info sheet specifying work and registration policies, preparation advice for students, and proposed work dates can be sent to the Conservation Office. The teachers will duplicate and distribute it to the students.

e) Keeping Numbers Manageable

The imposed deadlines create huge peak demand for hours. Unmanageable numbers of students (more than 50) have shown up for workdays, far exceeding available adult supervisor capacity. Consequently, requiring students to signup in advance should be considered necessary, not optional.

- Blurbs for all work days need to specify that students must pre-register, no exceptions.
- Pre-registration information from the student should include the student name, contact information, and teacher name.
- Students need to close the loop (respond to recruitment and show up when they promised).
- When you have the maximum number of names you are able to manage, accept a few more as "waiting list", then inform further recruits that your roster is full.
- Students who show up that are not on your list should be politely turned away. Most students are quickly left by a parent so you may need to check people off your list at the entrance to the parking lot.
- Friends of registrants need to register themselves.
- Students who fail to show up at a workday they signed up for should lose their eligibility for future workdays. This will require keeping a list of "no shows" and could be difficult to enforce.

f) Running Workdays

- Many students show up without forms, so make the standard school form PDF available online at the high school and our website.
- If there is a large number of students working on a given project, the steward may elect to submit one list of all the students who participated, rather than fill out an individual form for each student. The list should thoroughly describe the project as well as give student hours (may be the same or different for each student). The list should be sent to the Conservation Office to be forwarded to the high school teachers.
- Plan for the first 30 minutes of the workday as on-site registration time. Use this time to organize work groups, pass out tools, provide instructions, etc, and credit this time to the student's total hours worked.
- With proper training, adult crew leaders could do the pre-work training and instructions rather than trying to do this for the larger group as a whole. As soon as a full crew shows up, the crew leader takes them off to start working.
- Ideally, even large student crews should be assigned to the same adult crew leader for the whole work duration, and only this crew leader can sign forms. The event leader would have to keep a list of students and which leader they were assigned to. This could prove logistically difficult overall.
- If practical, each student should sign-in and sign-out a specific tool and be responsible for returning it at the end of the day. So far experience has been that (almost) all tools are returned in unbroken condition.
- Historically, motivation is the biggest problem managing the students.
- Student attention spans appear to average about 2 hours.
- Some students will try to bargain for more hours, including small fractions of hours, for example if they showed up a few minutes early. It is best to give all the same hours, rounded generously to the nearest hour, except students who arrive late and leave early.
- Establish firm conditions for whether or not hours will be credited.

- Students that use tools unsafely or fail to return tools should be sent home with zero hours.
- Students that refuse to abide by proper work practices after corrective advice should be sent home with hours already worked.

g) Small Groups

- Education combined with work.
- Limit to 3 students per supervising adult.
- Close supervision at all times.
- Theoretically, the work could be more complex than what is appropriate for large groups, but Lead Stewards with the skills and experience necessary to organize complex projects are in short supply.
- Due to the limited availability of small group supervisors and Lead Stewards, the large majority of students serviced by the Stewards will be in large groups for the foreseeable future.

h) Large Groups

- Onsite education is impractical.
- One approach is piece-work based whereby a predetermined amount of work accomplished earns a fixed amount of hours regardless of the actual time spent completing the task. Every student in a group receives the same hours based on how many "pieces" of work the group completes as a whole. The group members must work out amongst themselves how to distribute labor and deal with slackers. The advantage of this approach is that the students are mostly unsupervised and a predictable amount of work gets done. The adult crew leader needs to survey the job carefully in advance to determine how many "pieces" are available, how long it will take a student to process a piece, and how many volunteers are needed, which could be tricky. Examples of pieces: bags of trash, bags of plants, trees planted, graffiti removed, lumber items moved, wheelbarrows of fill moved.

i) Suggested Work

Below are the most common suggested tasks requiring minimal supervision of student volunteers. See the "Land Management Plan" for more suggestions. To supervise these activities, Stewards should meet with the student volunteers at the work site before the work commences to determine the scope of work involved and provide any training required. Upon completion of the project, the Steward should reconvene the students for a final inspection and to sign their hour sheets.

(1) Trash Removal

- Ask the student to provide trash bags, or provide.
- Require the student to use gloves.
- Discuss the safe handling of sharp objects such as broken glass.
- Inspect the area to be cleaned before and after in company with the student to evaluate achievement of project.

(2) Trimming Brush from Trails

- Teach student to recognize poison ivy.
- Instruct student in proper pruning techniques (see F, Trimming Trails).
- Remind student to move clippings off trails. Experience has shown student thoroughness in this area to be weak.

(3) Invasive Plant Control

- See C, Invasive Plants.
- The usual target plants are Garlic Mustard, Bittersweet Vine, Japanese Knotweed.
- Verify that the student can reliably identify the target plant and differentiate it from similar looking plants likely to be in the work area.
- Review the proper removal method for the target plant before allowing the student to proceed.
- Inform the student that bittersweet vines can be mingled with poison ivy vines.
- Set a clearly defined work are for the student.

C. Invasive Plants

Eradication efforts to control and eliminate invasive species requires careful planning in order to be successful. All efforts are labor intensive and time consuming. Some require repeated efforts over two or more growing seasons in order to be successful. Never-the-less, progress is possible and the work important in order to retain and expand the potential for native species to thrive. What follows is a brief overview of recommended procedures for a few of the most prevalent invasive species in Lexington. Note that only certified applicators may apply chemical controls on town owned property and all requests for use of herbicides must be made to the Conservation Administrator.

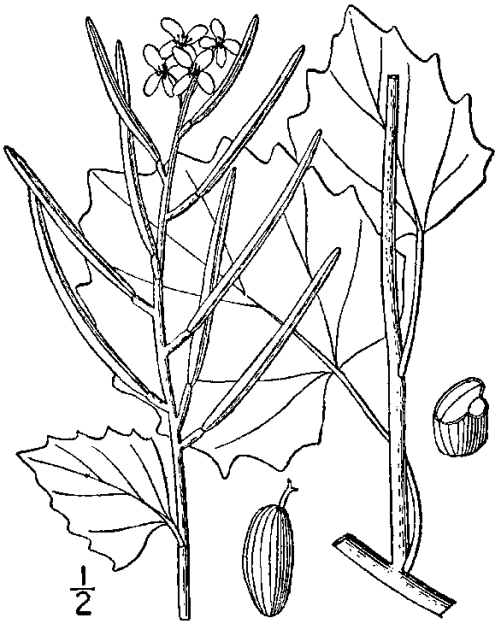
1. Offsite Disposal

Species that cannot be left to decompose cannot be sent to public landfills or compost stations where they would regenerate and spread. They must be incinerated. Residential trash in Lexington is incinerated, but like many towns that pay by the ton for incineration, has a rule that yard waste must go to the Town composting station instead of the incinerator. This can present a problem since the personnel that collect curbside trash typically are unaware of invasive plant disposal issues. To dispose of these plants:

1. Use thick black plastic bags.
2. If a reasonable number of bags of plants is collected, they can usually be distributed to volunteers to be left at the curb for weekly pickup one bag at a time.
3. If an impractical number of bags is collected, contact the DPW to arrange for the bags to be picked up *as trash, not compost* at the site.
4. If trash collection personnel refuse to take them, contact the DPW to arrange to deliver the bags to one of their trash dumpsters.

2. Species

a) Garlic Mustard (*Alliaria petiolata*)



Garlic mustard is a biennial with first year plants setting small rosettes of leaves that lie close to the ground and are often unnoticed until much later in the season or over the winter when snow cover is light. It is the second year plants that raise their flower stalks to set seed and are most recognizable. While perhaps the easiest of our common invasive species to physically remove by hand, it can be one of the most frustrating to control in that its seeds remain viable for up to five years in the soil. The absolute key in tackling this species is to adopt a multi-year plan, returning each year to the same treatment areas for continued removal until all evidence of the plant is gone. Once a program of eradication of garlic mustard is begun in a given area, a commitment should be made to return to this area on an annual basis until there is no further sign of this species returning.

The best method to remove this plant is by hand removal in the spring from mid to late April until mid to late May. This is the time of year when pulling the plant by the roots is easiest as the soil is typically moist from spring rains. Once the plant has finished flowering and set seed, it is best to not disturb it as the seeds disperse very easily and can cling to clothes, shoes, etc, which will spread the seeds over a far wider area than if left alone.

The best method for hand removal is to grasp the plant at the base of the stalk and gently pull the roots from the ground. With practice, the whole root is easy to remove in most soils. Do try and pull the root even if the flower stalk breaks off, as the plant is often able to generate new growth from imbedded roots and finish its flowering and seed production cycle either later in the year or the following season.

When clearing an area, make every effort to remove every specimen visible. Leaving only a few plants will generate enough seed to repopulate a cleared area the following season. If first year growth plants are noticed during removal of the second year plants, it is often best to leave them until the following season. The root structure of the first year plants is not as robust, often resulting in removal of the leaf rosettes only, leaving the roots in the ground. Second year plants are far easier to remove in their entirety, roots and all.

Discard the entire plant, roots and all, in plastic garbage bags which should be sealed and disposed of either with your curbside trash pickup or if in large quantities, contact the Conservation Office to arrange for DPW disposal. Do not attempt to compost this plant as its recuperative powers to finish its flowering cycle and generate seed are nearly miraculous.

If the area to be cleared is adjacent to wetlands or water, the Conservation Office must be notified in advance to determine if any reseeding efforts need to be undertaken. Removing vegetation adjacent to wetlands or streams can destabilize the soil resulting in the potential for erosion.

b) Japanese Knotweed (*Polygonum cuspidatum*)

Japanese knotweed is the familiar, bamboo-like perennial, often growing to heights in excess of 6’ or more in dense stands. It spreads via rhizomes making it particularly hard to eradicate.

Digging or attempting to uproot the plant are not recommended as even small pieces of the rhizomes are capable of regeneration. The best method for control is to cut the plant to ground as many as three times a season and covering the rhizomes with heavy gauge black plastic film and a heavy mulch on top of the film. When cutting the stalks, cut flush with the ground leaving no protruding stumps. Use the cut stalks to pile on top of the black plastic film to hold it in place, along with any other mulching materials at hand. Depriving the rhizomes of light is key to preventing their regeneration.

Returning to the treated area several times during the season and for several seasons in subsequent years, each time cutting any new growth and then reapplying the black plastic film and mulch as needed is required.

c) Oriental Bittersweet (*Celastrus orbiculatus*)

Oriental Bittersweet vine is the familiar vine with the attractive fall berries that open from orange to red as they ripen and are a sometimes favorite for creating eye-catching fall wreath displays. The vine itself, if left unchecked can eventually bring down trees and blanket an area with vigorous growth that covers everything in its path.

Young vines can be uprooted by hand with care to pull out as much of the root as possible. The uprooted vines can be dispersed in the surrounding underbrush to decompose. Return visits to the cleared area later in the season and for the following 2-3 years are necessary to determine if all root stock has been eradicated.

Older, woody plants that have succeeded in climbing nearby trees should be cut at the base. Cut the climbing vines up as high as you can reach, but leave the remaining vines that have climbed into the tree canopy in place as pulling them down will likely cause damage to the trees themselves. Disperse the cut vines in the adjacent undergrowth for decomposition. The root stock will re-sprout, often in the same season if cut before late summer/early fall. If cut in the fall, they will re-sprout the following season. Repeat visits are necessary to continue cutting back the new growth and eventually depriving the main root stock of any remaining ability to regenerate.

Alternatively, if a program has been set up with the Conservation Office and the services of a town-approved applicator has been secured, the application of a herbicide to the cut stump, immediately after cutting, will kill the root stock. The best season for this treatment is late fall after leaf drop.

D. Visitor Outreach

At the local level, Stewards are the "front line" of conservation public outreach. They are the facet of land management that is potentially the most visible to site visitors. They are also frequently in contact with site neighbors. This type of face to face outreach is one of the best ways to encourage responsible visitor behavior and reinforce public support of natural open space preservation.

1. Information

- Carry a site map/guide if available, and extras to hand out if practical.
- Carry website addresses, email list subscription information, and contact info of site coordinator Stewards, Directors, and Conservation Office.
- Don't guess or assume when answering questions or providing information. Do your homework, consult the "Land Management Plan", ask more experienced Stewards, Directors, or the Conservation Office, and follow up with a quality answer.

2. "Irresponsible" Visitors

- Visitors who are doing something they shouldn't usually respond positively if politely told why their actions adversely affect natural open space and its visitors.
- Don't argue with anyone. Refer them to the Conservation Office.
- Don't approach anyone you feel might be threatening or dangerous. Move to a safe distance and contact the Conservation Office or Police.

3. Follow Up

Carry a notebook to take the contact information of people you talk to and try to always follow up with them and ask if they are interested in joining the Stewards or coming to a meeting.

E. Cleanup

1. Needs

There is a reliable supply of litter, trash and junk in natural open space, so regular cleanup by individuals or organized workgroups is one of the most important stewardship activities. A group cleanup of every site should be done at least twice a year, with individuals opportunistically picking up litter in between.

2. Tools

1. Work gloves, as broken glass, sharp metal, unsanitary garbage, and thorns are common.
2. Clothes that fully cover you to protect against thorns, poison ivy, and ticks.
3. Waterproof boots or old shoes if cleaning brooks, ponds, or other wetlands.
4. Plastic trash bags.
5. An old knapsack for opportunistic litter collection during recreational site visits is easier to carry than a plastic bag.
6. For removal of engines or other heavy items, a concrete buggy that can navigate trails reasonably well (looks like a large 2 wheeled wheelbarrow) can be rented (see 0, Suggested Vendors).

3. Disposal

1. If a reasonable number of small items and bags of trash is collected, they can usually be distributed to volunteers to be left at the curb for weekly pickup one or two bags at a time.
2. If large items or large numbers of trash bags are collected, leave them near a truck accessible road and contact the DPW to arrange for pick up. It may be weeks before the DPW schedules the pickup, so be sure to pile collected trash and junk items in such a way as not to inconvenience or endanger neighbors and visitors.

4. Hazardous Materials or Pollutants (Hazmats)

a) Familiar

Examples of familiar hazmats:

- Household pesticides and fertilizers
- Paint
- Batteries
- Oil filters
- Oil containers
- Heating oil tanks
- Refrigerators and air conditioners

These can generally be removed by volunteers if done carefully to prevent spillage. If fresh leakage is evident or if you are in doubt about what to do, mark and record the location of the item and contact the Conservation Office.

b) Unfamiliar

If you encounter any unfamiliar materials or containers, do not go near them. Mark and record the exact location and immediately contact the Conservation Office.

F. Trimming Trails

1. Appearance

The most important rule of thumb to observe in performing routine trail maintenance involving trimming or cutting of branches, etc., is to leave as little evidence in the form of visible cuts as possible. The end result of your endeavors should ideally be a trail that is free of protruding branches and looks as natural as possible. This is not always achievable, especially in areas with heavy brambles that must be sheared, but the overall goal should be to make the evidence of trimming as unobtrusive as possible.

The most frequently forgotten part of the trimming job is the removal of cuttings from the trail. This seems especially true with student community service volunteers.

2. Trail Width

If in doubt about whether a trail is singletrack or doubletrack or how wide it should be, trim it narrower. A wider trail can be quickly created if necessary from a narrower one, but the reverse takes years of growth.

3. Why Pruning Technique Matters

The pruning of limbs of woody plants must be done properly so that the cuts made heal correctly. Improper cuts, especially where limbs meet the trunk of the plant can lead to disease and the eventual weakening and death of the plant.

The area of the plant where the limb meets the trunk is called the branch collar. This is the zone where branch collar tissue develops from the branch ends towards the trunk, turning abruptly downward at the branch base. Trunk collar tissue develops later in the life of the branch, growing up and over the branch collar tissue. The branch collar is the zone where these two types of tissue overlap. The branch bark ridge is the raised bark which develops in the branch crotch where the branch meets the trunk.

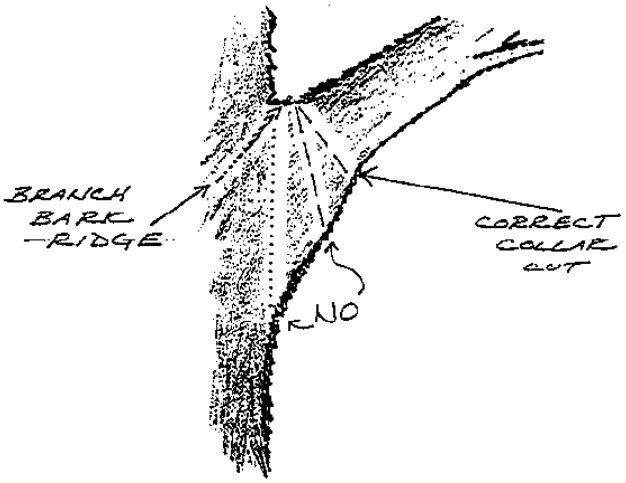
Proper pruning allows the trunk collar tissue to grow over the cut made, eventually walling off the living trunk tissue with a protective layer of bark. Cuts into either the branch collar tissue or the branch bark ridge tissue will not heal properly, allowing for disease organisms to enter the plant's trunk tissue leading to disease and premature death of the plant.

4. Proper Cuts

Cuts must be made *outside* of the branch bark ridge and branch collar area (see 3 above, Why Pruning Technique Matters), angling away from the trunk, but as close as possible to the collar.

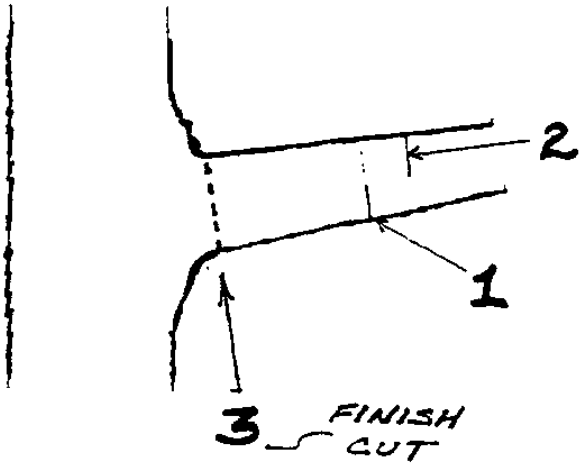
There is no set or standard angle for a proper collar cut. Whether a branch collar is obvious or not, the final cut should:

1. Minimize the branch stub
2. Leave the branch bark ridge and branch collar intact.
3. Minimize the overall size of the pruning wound.



Always stub cut the branch first. This technique uses a minimum of three cuts, the first two cutting off most of the branch but leaving a portion of 1-2' feet remaining for the final finish cut. This technique minimizes the chance of the bark tearing down the trunk, creating a wound that is difficult to heal.

1. The first cut undercuts the branch 1-2' out from the parent branch or trunk. A properly made undercut will eliminate the chance of the branch's peeling or tearing bark as it is removed.
2. The second cut is the Top Cut, which is usually made slightly further out on the branch than the under cut. This allows the branch to drop smoothly when the weight is released.
3. The third or finish cut is to remove the stub.



Each finish cut should be made carefully, outside of the branch bark ridge and branch collar areas, leaving a smooth surface with no jagged edges or torn bark.

5. Painting of Cuts

Painting of pruning cuts with wound dressing is, in general, a questionable practice. Wound dressings will not prevent decay, and in fact have been found to often promote wood decay.

6. Proper Timing

The ideal or optimal times to prune most woody plants are either late in the dormant season or well into the growing season, after leaves are fully formed and expanded. Cuts or wounds in certain species during the growing season may attract insects that carry diseases, or allow fungus invasion. Avoid pruning woody plants undergoing bud break and early leaf expansion.

7. Tools

- Minimum: folding hand saw and a pocket sized pruner, preferably one with increased leverage to cut thicker branches.
- Heavy duty loppers with long handles are generally the most productive trimming tool.
- Garden rake to remove non-woody cut stems from the trail.
- Old hand saw to cut saplings close to the ground without dulling a new one with sand.
- Pole pruner to for cut overhead braches.
- For most trimming, a chainsaw is not needed.

G. Monitoring

Citizens that join the Stewards are probably regular visitors to natural open space. Monitoring combines outdoor recreation with practical public service. You are the eyes of natural open space management because the Conservation Office and the Police can monitor only a small fraction of the land at any given time.

1. Tools

Because details of observations are easily forgotten, carry a notebook and digital camera with you whenever you visit a site. Also carry a wireless phone and the contact information of site coordinator Stewards, Directors, the Conservation Office, the DPW, the Police (business), and the Fire Department (business). A map is useful, but accurate site maps are generally not currently available.

2. What to Look For

- Any unusual changes in natural or manmade features.
- Presence of unusual wildlife (you are not looking for just *problems*).
- People committing illegal activities, or evidence of such, particularly underage drinking, fires, operation of motor vehicles, hunting or trapping, shooting, and disposal of hazmats or pollutants.
- Trees and brush being cut in ways that are not proper trail trimming (see F above, Trimming Trails).
- Large deposits of trash or junk.

- Vandalism of natural or manmade objects.
- Digging of holes.
- Any type of construction.
- Overgrown trails.
- Trails that are becoming progressively eroded.
- Trails that are very wet or muddy outside of the spring wet season (roughly March through April).

H. Reporting

1. Urgent Problems

a) In Progress

If you observe *in progress* any of the following activities or others that qualify as urgent in your judgment, contact the listed Town agency immediately, and later report the incident using the procedure in 2 below for Normal Observations.

Activity observed	**Contact immediately (see VI.A, Contact Information)**
Unauthorized motor vehicle	Lexington Police (Business)
Use of firearms	Lexington Police 911
Fire	Lexington Fire Department 911
Tree cutting	Lexington Police (Business)
Hunting or trapping	Lexington Police 911
Serious personal injury	Lexington Fire Department 911
Partying	Lexington Police (Business)
Unknown hazmat or pollutant	Conservation Office (weekdays) or Lexington Police 911(24 hours)

b) After the Fact

Except for "Unknown hazmat or pollutant", discovery of evidence of these activities after the fact can be reported using the procedure in 2 below for Normal Observations.

2. Normal Observations

a) What to Report

1. Urgent problems, even if they were otherwise solved by contacting a public safety agency such as the police or fire department. Tracking these incidents provides useful land management information.
2. Anything meeting the criteria in G.2 above, What to Look For.
3. Problems that have been fixed or don't occur anymore but were never previously reported.
4. Evidence of a problem after the fact if it was human-caused.
5. If in doubt, reporting too many observations is better than reporting too few.

b) Information to Report

Try to pinpoint observations geographically, but sometimes general descriptions like “At least a half dozen large blowdowns in Fred’s Woods” or “All open areas in Barney’s Meadow need mowing” are sufficient. Record the date and time of observations and include photos if possible.

c) How to Report

Phone, email, or send paper mail to the Conservation Office (See VI.A, Contact Information).

I. Working with the Town

Normally volunteers are welcome to do work on Town property, with proper permission, but be aware that some employees may have clauses in their contracts with the Town concerning using volunteers to assist them in their duties, and that even lacking such contractual clauses, Town employees may have concerns during periods of budget cuts about job security, the quality of their work with reduced resources, and being replaced by volunteers. It is important to be sensitive to their needs in all situations.

Above all, always be polite and patient. The respect and support you get from the Town will be directly related to the respect and support you give its employees.

V. Glossary of Terms and Abbreviations

blowdown	Fallen branch or tree.
Citizens for Lexington Conservation	(CLC) A private non-profit group organization concerned with the preservation of environmental quality in the Town of Lexington.
CLC	See Citizens for Lexington Conservation.
the Commission	See Conservation Commission.
concomm	See Conservation Commission.
Conservation Office	The Town employee(s) in the Office of Community Development, including the Conservation Administrator and assistant(s), that direct the Commission and process WPA applications. (781) 862-0500 X-227
Conservation Commission	(the Commission) The Lexington Conservation Commission, consisting of 7 volunteer members appointed by the Lexington Board of Selectmen. Directed by the conservation administrator and charged with the administration of the WPA and the management of Town owned conservation lands and conservation restrictions. http://ci.lexington.ma.us/boards.htm#Conservation%20Commission
the Directors	Volunteers appointed by the Commission to manage the operation of the Stewards program
doubletrack	Wide trail on which users may travel two or more abreast. Sometimes called fire road because it is intended to carry emergency vehicles.
DPW	The Lexington Department of Public Works. http://ci.lexington.ma.us/dpw/dpw.htm
DR Mower	A high powered commercial quality brush mower that mulches it clippings. www.countryhomeproducts.com
Handbook	This Stewardship Handbook
hazmat	Hazardous material
LHS	Lexington High School
natural open space	Open space left substantially in an unlandscaped natural state.
open space	Any land that has no buildings or pavement on it. Includes cemeteries, playing fields, urban parks, farms, orchards, golf courses, and other developed open areas as well as natural open space.
singletrack	Narrow trail on which users must travel single file.
Stewards	The Lexington Conservation Stewards.
the Town	The elected officials, appointed committee members, and employees of the town of Lexington, Massachusetts.
WPA	The Massachusetts Wetlands Protection Act, MGL chapter 131 section 40, www.mass.gov/legis/laws/mgl/131-40.htm

VI. Appendices

A. Contact Information

This information is up to date as of the approval date of this Handbook.

Stewards		landstewards@ci.lexington.ma.us
Conservation Office	781- 862-0500 X226	landstewards@ci.lexington.ma.us
Conservation Administrator - Karen Mullins	781- 862-0500 X227	kmullins@ci.lexington.ma.us
Conservation Assistant – Emily Schadler	781- 862-0500 X240	eschadler@ci.lexington.ma.us
Lexington Police (Business)	781-862-1212	
Emergencies (all)	911	

Site	**Primary Contact**	**Phone/email**
Cheisa Farm	Stewart Kennedy	sgkbigguy@aol.com 781.861.7697
Dunback Meadow	Bonnie Newman	bjnewman@rcn.com 781-861-8191
Hayden Woods	Gregory Shenstone	shenstone21@comcast.net 781.861.7168, 339.223.7168
Hayden Woods	Thomas Whelan	thomas.whelan@brooks.com
Idlewilde	Sheila DerMarderosian	shay.der@verizon.net (781)862-0343, (617)922-3640
Lower Vine Brook	Peter & Valerie Johnson	VJohnson35@aol.com 781.862.4205
Lower Vine Brook	Keith Ohmart	kohmart@verizon.net
Meagherville	Bart DeWolf	bdewolf@alum.mit.edu (781) 861-7968
Meagherville	Mike Tabaczynski	mjt1@rcn.com
Mooney	John Frye	jwfrey2@aol.com
Parker Meadow	Stewart Kennedy	sgkbigguy@aol.com 781.861.7697
Poor Farm	Lisbeth Bornhofft	lbornhofft@neaq.org
Shaker Glen	Herb Wasserman	H.Wasserman@comcast.net
Shaker Glen	Richard DeLuca	jcandrichd@aol.com 781.274.6949
Whipple Hill	Jon Cole	colebiz@rcn.com 781-861-8326
Whipple Hill	Mike Tabaczynski	mjt1@rcn.com
Willard's Woods	Pete Mahoney	mhnpete@rcn.com 781.454.5199
Willard's Woods	David Kaufman	DavidLKaufman@rcn.com
Turning Mill	David Kaufman	DavidLKaufman@rcn.com

B. Suggested Vendors

There is no implied endorsement of these vendors.

1. Power Tool and Equipment Rental, 919 Main Street, Woburn, MA 01801, 781-933-1902 www.rent1.com. Good prices, service, and wide selection of equipment.
2. Deering Lumber and Masonry Supply, 118-158 Essex Street, Melrose MA 02176, 781-665-3000. Free delivery, good service, consistently the best prices and availability on lumber, especially ACQ pressure treated.
3. Friend Lumber, 11 Adams St, Burlington, MA 01803, 781-229-9314. Convenient and good service, smaller selection of lumber and higher prices.
4. Arlington Coal & Lumber Co, 41 Park Ave, Arlington, MA 02476, 781-643-8100. Marginal service and selection, but convenient and the Conservation Office has an account there.
5. Lexington Ace Hardware, 327 Woburn St, Lexington, MA 02420, 781-863-0100. Classic local hardware store that carries even the most obscure items. Good service and prices, and the Conservation Office has an account there.

VII. References

Information from the following sources was used in the creation of this handbook.

A. Included Documents

The contents of the following documents are an integral part of this handbook.

1. "Land Management Plan, Lexington Massachusetts", Stewards and the Commission. Pending its availability, relevant excerpts from the most recent draft of the Plan are included in VIII, Land Management Plan Draft.

B. Recommended Reading

Printed versions available from the Directors or Conservation Office.

1. "Trail Solutions: IMBA's Guide to Building Sweet Singletrack", International Mountain Bicycling Association, stores.yahoo.com/imba/trsobo.html. The most state-of-the-art general trail book available, with bike specific information.
2. "Trail Construction and Maintenance Notebook", USDA Forest Service No. 0023-2839-MTDC-P, www.fhwa.dot.gov/environment/fspubs/00232839/ or www.fhwa.dot.gov/download/hep/fspubs/pdf00232839.pdf. The book to read if you can only read one short one.
3. "Wetland Trail Design and Construction", USDA Forest Service No. 0123-2833-MTDC, www.fhwa.dot.gov/environment/fspubs/01232833/. Wide range of wetland structure information.
4. "Part 2 Designing Sidewalks and Trails for Access", US DOT, FHA Publication No. FHWA-EP-01-027, September 2001. Good insight on how to keep open space open to all citizens.
5. "Appalachian Trail Design, Construction, and Maintenance", Birchard and Proudman, Appalachian Trail Conference, www.atctrailstore.org. Concise with lots of practical guidelines based on field experience.
6. "The Complete Guide to Trail Building and Maintenance", Demrow and Salisbury, Appalachian Mountain Club, www.appalachianmountainclub.org/publications/index.cfm. A little old fashioned and duplicates information from other books, but the only source that has a chapter on building cross country ski trails.
7. "Managing Conservation Land", Westover, Massachusetts Society of Municipal Conservation Professionals, out of print. Limited trail and visitor management information, but rich natural resource management information.

C. Other Sources

1. "Stewardship Manual for Lexington Conservation Land", CLC and the Commission, 1983 (approximately).

VIII. Land Management Plan Draft

Below are relevant excerpts from the most recent draft of the Land Management Plan pending its availability.

A. Scouts and Student Community Service

Scouts and students needing conservation-themed community service hours or qualifying projects usually have deadlines to meet. They need to be informed in advance of their responsibility to plan ahead because sufficient adult supervisors and suitable projects in natural open space are not always available. The best way to do this is to coordinate with the appropriate teachers and scout leaders.

1. Suggested tasks

These tasks can generally be done with reasonable adult supervision, especially if strong guidance is given to the students or scout prior to beginning the task.

a) Community Service Students

- Trash removal
- Invasive plant control
- Graffiti removal
- Transportation of construction materials
- Transporting wheelbarrows of fill
- Non-critical planting, such as large numbers of tree plugs
- Small blowdown removal
- Trimming doubletrack trails

b) Scouts

- Entrance sign installation and repair
- Interpretive sign or kiosk installation
- Large scale cleanup, such as brooks
- Removal of large junk items like cars
- Invasive plant control, supervising students
- Unauthorized structure removal
- Minor trail erosion control
- Graffiti removal

2. Tasks Not Recommended

These tasks should generally not be assigned to students or scouts without close adult supervision. Scout Eagle projects in particular are usually complex enough to require supervision by adults with significant land management experience. Discretion is appropriate if a student or scout has demonstrated high capability or has an adult mentor with the necessary knowledge or experience.

a) Community Service Students

- Critical planting, such as small numbers of purchased trees
- Large blowdown removal
- Trimming singletrack trails
- Painting blazes
- Trimming high branches

b) Scouts

- Bridges and boardwalks
- New or relocated trails
- Switchback construction
- Major trail erosion control
- Visitor maps and brochures

B. Habitat Enhancement

After centuries of human activities like timbering, agriculture, mining, and construction, it is difficult or impossible to determine the "natural" state to which any site's habitat should be restored. Therefore, objectives for habitat enhancement should be set based on available resources, practical issues, and personal preference of the local conservation community as well as scientific knowledge and the application of ecological principles.

1. Invasive Plants

After habitat loss, invasive plants are the greatest threat to biodiversity. To improve biodiversity and restore habitat for native animals, invasive plants should be eliminated and replaced with appropriate native species to the greatest degree practical.

1. Early detection and removal are the most efficient and effective ways to battle invasive plants. Unwanted plants established for as little as 2 years are difficult to control.
2. When clearing an area, every effort should be made to remove every plant visible to prevent the target species from repopulating the area from seeds or rhizomes the following season.
3. Plant control projects should in most cases include reseeding or replanting to prevent erosion and proliferation of the same or other invasive plants into the cleared area.
4. If the target area is adjacent to a wetland, the Conservation Office must be notified in advance and WPA paperwork may need to be filed.
5. Because chemical control methods can be expensive and prohibited by WPA, they should be considered only to solve the most difficult plant control problems. See IV.C, Invasive Plants.

The following species prevalent in Lexington are recommended targets for control:

a) Garlic Mustard (*Alliaria petiolata*)

1. Because its seeds remain viable for up to five years in the soil, the target area should be revisited every year until all evidence of the plant is gone.
2. This plant is most easily removed by hand from mid to late April until mid to late May.
3. Once the plant has finished flowering and set seed, it should be left alone to prevent dispersing the seeds beyond the target area via clothes, shoes, etc.
4. This plant should not be composted as its recuperative powers to finish its flowering cycle and generate seed are nearly miraculous.

b) Japanese Knotweed (*Polygonum cuspidatum)*

1. Because Japanese knotweed spreads via rhizomes, it is particularly difficult to eradicate.
2. Digging or attempting to uproot the plant is not recommended as even small pieces of the rhizomes are capable of regeneration.
3. The best method for control is to cut the plant to ground as many times as practical in a season and covering the rhizomes with heavy gauge black plastic film and a heavy mulch on top of the film.
4. Stalks should be cut flush with the ground leaving no protruding stumps.
5. Cut stalks can be composted on site.
6. Depriving the rhizomes of light is key to preventing their regeneration.
7. The treated area should be revisited several times during the season and several subsequent seasons.

c) Oriental Bittersweet (*Celastrus orbiculatus*)

1. American bittersweet (*Celastrus scandens*) is not invasive.
2. Young vines should be uprooted by hand and dispersed to decompose.
3. The cleared area should be revisited later in the season and in the following 2-3 seasons until all root stock has been eradicated.
4. Older, woody plants that have succeeded in climbing trees should be cut at the base as high as practical leaving the remaining vines in place in the tree canopy, as pulling them down will likely damage the trees. The cut vines can be dispersed to decompose.
5. The root stock will often re-sprout in the same season if cut before late summer/early fall or in the following season if cut in the fall. Repeat visits are necessary to cut back the new growth and eventually depriving the root stock of any remaining ability to regenerate.
6. Alternatively, in late fall after leaf drop, herbicide can be applied to the stump immediately after cutting to kill the root stock. See IV.C, Invasive Plants.

C. General Maintenance

1. Litter, Trash, and Junk

Litter, trash, and junk items should be removed regularly from all sites to enhance the visitor experience, discourage the deposition of more items, and eliminate choking and entrapment hazards to wildlife. No permission is necessary, anyone can cleanup any site at any time. Wherever safe and practical, items should be removed from areas off the beaten track as well as from more visible high traffic areas. The removal of large heavy items such as engines and cars should not result in unusual trail or environmental damage, such as might be caused by construction equipment. Difficult to remove items should not be neglected because, once removed, most are unlikely to reappear. Proper fire prevention precautions should be taken when using power tools to cut up cars, appliances, and other large items for removal.

2. Forest Duff

Leaves, pine needles, and other mulch should not be removed from trails. The retention of these materials is critically important to the creation of what is known as forest duff, the topmost organic layer on the forest floor that breaks down over time as part of the soil building process. Occasionally, when building a new trail through forest with sparse undergrowth, it may be necessary to remove duff to identify the trail's center until it is defined by the wear of visitor traffic.

3. Trimming Trails

a) Appearance

The ideal end result of trimming is a trail that is sufficiently wide and looks natural with few visible cuts. All cut branches and brush should be moved well off trail with the cut end pointing away from the trail.

b) Signs

1. Signs and trail markings should be kept visible from their expected viewing angle.
2. Branches should be kept far enough away from signs and kiosks to prevent damage caused by snow, ice, and wind.

c) Width and Height

1. Trails should normally be trimmed to the following widths from ground level to the highest overhead reach while standing on the ground:
   - Singletrack with normal trailside vegetation: 4 feet (both elbows outstretched).
   - Singletrack if trailside vegetation is thorny, allergenic (poison ivy), rapidly growing, or invasive: 6 feet (both arms outstretched).
   - Doubletrack minimum: 8 feet
   - Doubletrack for easy passage of any sized service vehicle: 11 feet.

2. Better visibility around curves reassures users about what is ahead and reduces conflicts between visitors. For example, faster traffic can slow down when approaching slower traffic, and dog walkers can restrain their pets when approaching small children. By selectively pruning trailside growth on the inside of curves, good visibility can be maintained without overly widening trails.
3. Intersections are a common stopping point for visitors to rest, navigate, or socialize. Intersection areas should be trimmed wider than adjoining trails to accommodate these needs and reduce conflicts involving faster traffic.
4. So trails will remain passable all winter, overhead clearance should be as high as can be achieved by workers standing on the ground (approximately 8 feet) to allow for deep snow cover and branches weighted down with snow and ice.

d) Safety

1. Thorny cuttings should be scrupulously removed from the trail to protect dogs, small children, and prevent flat tires.
2. Saplings should be cut as close to ground as possible to avoid creating trip and impale hazards.
3. Limbs should be cut back to the main trunk or branch whenever possible so as not to leave hazardous branch ends projecting near the trail above ground.

e) Tree Health

1. When possible, small woody plants should be pulled out by the roots rather than cut.
2. Living limbs should always be pruned in such a way as to prevent disease and infestation that can harm the plant.
3. Pruning cuts should not be painted.
4. When possible, pruning should be done late in the dormant season or well into the growing season, after leaves are fully formed and expanded.

4. Blowdowns

Blowdowns should be removed as soon as possible from trail corridors where they present a hazard of falling on visitors and would encourage visitors to create new trails around them. Cut deadwood should be left to decompose near where it fell. Blowdowns that are not hazardous and do not completely obstruct very rugged trails can be left in place if they contribute to the character of the trail.